

### IN THE CLAIMS:

Claims 1, 25, 27, 32, 40 and 57 are amended herein. Claims 18-24 and 54-56 are cancelled without prejudice. All pending claims and their present status are produced below.

1 1. (Currently amended) A system for illuminating a target surface, the system  
2 comprising:  
3 a light source, positioned at a first angle relative to a circuit board, the light source  
4 configured for emitting light to illuminate the target surface; and  
5 a lens having an entrance surface and an exit surface, the entrance surface positioned  
6 to gather the light from the light source and the exit surface directing the light  
7 onto the target surface, wherein the entrance surface and the exit surface are  
8 positioned at a second angle relative to each other, the second angle  
9 dimensioned to fold a light beam from a first direction associated with the  
10 angle of the light source relative to the circuit board to a second direction  
11 associated with an impinging angle for illuminating the target surface,  
12 wherein the first direction is different from the second direction.

1 2. (Original) The system of claim 1, wherein the lens directs the light onto the target  
2 surface using refraction.

1 3. (Original) The system of claim 1, wherein the lens directs the light onto the target  
2 surface using a Fresnel lens.

1 4. (Original) The system of claim 1, wherein the lens directs the light onto the target  
2 surface using a diffractive optical element.

1 5. (Original) The system of claim 1, wherein the angle between the light source and the  
2 circuit board is approximately an angle between 10 degrees and 45 degrees.

- 1 6. (Original) The system of claim 1, wherein the light emitted from the light source  
2 flows through an opening in the circuit board.
- 1 7. (Original) The system of claim 1, wherein the light source protrudes through the  
2 circuit board.
- 1 8. (Original) The system of claim 1, wherein the lens is wedge-shaped.
- 1 9. (Original) The system of claim 1, the entrance surface further comprises a curved  
2 surface for gathering light emitted from the light source.
- 1 10. (Original) The system of claim 9, wherein the curved entrance surface is  
2 aspherical in shape.
- 1 11. (Original) The system of claim 1, wherein the exit surface further comprises a  
2 curved surface for spreading light emitted from the light source onto the target  
3 surface.
- 1 12. (Original) The system of claim 11, wherein the curved exit surface is toroidal in  
2 shape.
- 1 13. (Original) The system of claim 1, wherein the system is for use in an optical mouse.
- 1 14. (Original) The system of claim 1, wherein the system is for use in an optical  
2 trackball.
- 1 15. (Original) The system of claim 1, wherein the light source is a light emitting diode.
- 1 16. (Original) The system of claim 1, wherein the lens is made from glass.
- 1 17. (Original) The system of claim 1, wherein the lens is made from an optical plastic.
- 1 18. (Cancelled)
- 1 19. (Cancelled)
- 1 20. (Cancelled)

- 1 21. (Cancelled)
- 1 22. (Cancelled)
- 1 23. (Cancelled)
- 1 24. (Cancelled)
- 1 25. (Currently amended) A method for illuminating a surface using an illumination  
2 system in a computer pointing device, the method comprising:  
3 emitting light at a first angle relative to the surface;  
4 gathering the light; and  
5 directing the light from the pointing device at a second angle onto the surface using a  
6 refractive lens, wherein the first angle is different than the second angle.
- 1 26. (Previously presented) The method of claim 25, wherein the first angle relative to the  
2 surface is approximately between 10 degrees and 45 degrees.
- 1 27. (Currently amended) An illumination system in a computer pointing device for  
2 illuminating a surface, the system comprising:  
3 a light emitting means for emitting light, the light emitting means tilted at a first angle  
4 relative to the surface;  
5 a gathering means for gathering the light from the light source; and  
6 a directing means for directing the light at a second angle onto the surface, wherein  
7 the first angle is different than the second angle.
- 1 28. (Original) The system of claim 27, wherein the light emitting means is a light  
2 emitting diode.
- 1 29. (Original) The system of claim 27, wherein the light emitting means is tilted at an  
2 angle of approximately 10 degrees to 45 degrees.

1 30. (Original) The system of claim 27, wherein the gathering means is a lens positioned  
2 to gather the light from the light emitting means.

1 31. (Original) The system of claim 27, wherein the illumination system is housed in an  
2 optical mouse.

1 32. (Currently amended) A refractive lens comprising:  
2 a first curved surface, positioned to gather light; and  
3 a second curved surface, coupled to the first surface, shaped for directing the light  
4 in an optical illumination system to a target surface, wherein the first surface  
5 and the second surface are positioned at an angle relative to each other, the  
6 angle dimensioned to fold a light beam from a first direction associated with a  
7 light source to a second direction associated with an impinging angle for  
8 illuminating the target surface using refraction, wherein the first angle is  
9 different than the second angle.

1 33. (Original) The refractive lens of claim 32, wherein the first surface is aspherical in  
2 shape.

1 34. (Original) The refractive lens of claim 32, wherein the second surface is toroidal.

1 35. (Previously presented) The refractive lens of claim 32, further comprising the light  
2 source for illuminating the first surface and the second surface.

1 36. (Original) The refractive lens of claim 32, wherein the refractive lens is used in an  
2 optical mouse.

1 37. (Original) The refractive lens of claim 32, wherein the refractive lens is used in an  
2 optical trackball.

1 38. (Original) The refractive lens of claim 32, wherein the lens is composed of glass.

1 39. (Original) The refractive lens of claim 32, wherein the lens is composed of an optical  
2 plastic.

1 40. (Currently amended) An illumination system in an optical pointing device, using  
2 total internal reflection, the illumination system comprising:  
3 an entrance surface, positioned to gather light from a light source positioned at a first  
4 angle with respect to a target surface;  
5 a truncated light pipe, coupled to the entrance surface, for directing the light gathered  
6 at the first angle by reflecting at a second angle off a first reflective surface  
7 meeting a total internal reflection condition, wherein the first angle is different  
8 than the second angle; and  
9 a curved exit surface, coupled to the truncated light pipe, for efficiently directing  
10 the light onto the target surface.

1 41. (Original) The system of claim 40, wherein a section of the light pipe is cone-shaped.

1 42. (Original) The system of claim 41, wherein the cone-shaped light pipe has a larger  
2 entrance cross-section than an exit cross-section.

1 43. (Original) The system of claim 40, wherein a section of the truncated light pipe is  
2 cylindrically shaped.

1 44. (Cancelled)

1 45. (Previously presented) The system of claim 40, wherein the first reflective surface  
2 has a metal coating.

1 46. (Cancelled)

- 1 47. (Previously presented) The system of claim 40, further comprising a second  
2 reflective surface for further directing the light toward the exit surface at a third  
3 angle.
- 1 48. (Original) The system of claim 47, wherein the second reflective surface has a metal  
2 coating.
- 1 49. (Cancelled)
- 1 50. (Cancelled)
- 1 51. (Original) The system of claim 47, wherein the light source is a light emitting diode.
- 1 52. (Original) The system of claim 40, wherein the truncated light pipe is made from an  
2 optical plastic.
- 1 53. (Original) The system of claim 40, wherein the truncated light pipe is made from  
2 glass.
- 1 54. (Cancelled)
- 1 55. (Cancelled)
- 1 56. (Cancelled)
- 1 57. (Currently amended) An illumination system for use in a displacement detection  
2 computer pointing device, the system comprising:  
3 a circuit board;  
4 a light emitting diode at a first angle relative to the circuit board; and  
5 a lens aligned with the light emitting diode for focusing the light at a second angle  
6 onto a surface, wherein the first angle is different from the second angle, the  
7 lens comprising an aspherical entrance surface and a cylindrical exit surface.

1 58. (Previously presented) The system of claim 1, wherein the circuit board is configured  
2 within the system for illuminating to be parallel to the target surface during normal  
3 operation.